

Annual Peak-Flow Frequency Analysis

For more information on the contents of this documentation, see Kessler and others (2013).

Streamgauge number and name:

05080000 Red Lake River at Fisher, Minn.

Peak-flow information:

| | |
|---|------|
| Number of systematic peak flows in record | 12 |
| Systematic period begins | 2000 |
| Systematic period ends | 2011 |
| Length of systematic record | 12 |
| Years without information | 0 |
| Number of historical peak flows in record | 0 |

Frequency analysis options:

| | |
|------------------------------------|-------------------------------|
| Method | Bulletin 17B |
| Skew option | Weighted |
| Generalized skew | -0.391 |
| Standard error of generalized skew | 0.55 |
| Low-outlier method | Bulletin 17B Grubbs-Beck test |

Bulletin 17B systematic record analysis results:

Moments of the common logarithms of the peak flows:

| | Standard | |
|--------|-----------|----------|
| Mean | deviation | Skewness |
| 4.0906 | 0.2882 | -0.703 |

Outlier criteria and number of peak flows exceeding:

| | | |
|------|---------|---|
| Low | 2989.3 | 0 |
| High | 50782.1 | 0 |

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

| | Standard | |
|--------|-----------|----------|
| Mean | deviation | Skewness |
| 4.0906 | 0.2882 | -0.514 |

Annual frequency curve at selected exceedance probabilities:

| Exceedance probability | Peak estimate | Lower-95 level | Upper-95 level |
|------------------------|---------------|----------------|----------------|
| 0.9950 | 1,620 | 508 | 2,940 |
| 0.9900 | 2,060 | 727 | 3,530 |
| 0.9500 | 3,790 | 1,800 | 5,730 |
| 0.9000 | 5,120 | 2,780 | 7,360 |
| 0.8000 | 7,210 | 4,490 | 9,970 |
| 0.6667 | 9,730 | 6,640 | 13,400 |
| 0.5000 | 13,000 | 9,380 | 18,400 |
| 0.4292 | 14,600 | 10,600 | 21,100 |
| 0.2000 | 21,800 | 15,700 | 35,400 |
| 0.1000 | 27,600 | 19,400 | 49,200 |
| 0.0400 | 34,700 | 23,600 | 68,500 |
| 0.0200 | 39,900 | 26,400 | 83,800 |
| 0.0100 | 44,800 | 29,000 | 99,400 |
| 0.0050 | 49,500 | 31,400 | 115,000 |
| 0.0020 | 55,500 | 34,400 | 136,000 |

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

| Water | Peak | Peak-flow |
|-------|--------|-----------|
| year | flow | code |
| 2000 | 7,600 | -- |
| 2001 | 24,500 | -- |
| 2002 | 15,000 | -- |
| 2003 | 4,210 | -- |
| 2004 | 11,000 | -- |
| 2005 | 11,900 | -- |
| 2006 | 26,400 | -- |
| 2007 | 10,200 | -- |
| 2008 | 3,640 | -- |
| 2009 | 25,200 | -- |
| 2010 | 20,500 | -- |
| 2011 | 15,700 | -- |